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DO "COST OF TRANSPORTATION" EXHIBITS IN RAILROAD RATE CASES SHOW COST?

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The cost of transportation is an important element in the reasonableness of a railroad rate.

This general proposition is universally accepted. The difficulty comes in applying it to a specific case. When the circumstances permit, a favorite means of applying the general proposition to the specific case is by means of an exhibit purporting to show the cost of carrying the commodity in question either to all destinations or between certain points and over certain routes believed to be representative. The final figure in these computations is said to be the "cost" of the particular service.

But is the word "cost" properly applicable to this figure? A careful study of the nature of these exhibits will indicate, it is believed, that the word "cost" so used is a misnomer. If the so-called "cost" of a particular service is really something different, it is misleading to call it "cost," and unsound to treat it (as we do) as though it were cost.

These computations consist of two different processes. One is an *allocation* to a particular traffic of costs attributable solely to it; the other is an *apportionment* between the particular traffic and other traffic of costs jointly caused by both kinds of traffic. The distinction is vital. The purpose of this article is to expound the essential difference between these processes and the consequences of that difference.

The process of *allocation* consists of separating from the total costs those costs which are caused entirely by one traffic. In the separation of freight and passenger expenses, certain items, such as the wages paid freight conductors and the cost of fuel burned by engines in freight service, are at once seen to be exclusively freight costs. Not a cent of these expenses was caused by the passenger traffic and not a cent need have been spent if there had been no freight traffic. This is a clear matter of fact, and we can,

by close observation and accurate recording of the facts, tell the exact amount of each item of cost thus exclusively caused.

Our means of recording the facts are better than they once were. For example, the old accounting rules of the Interstate Commerce Commission provided for a single account "Fuel for Road Locomotives," so that one who would know the cost of fuel for freight engines had to "unscramble the eggs" by *apportioning* the total cost on some such basis as locomotive miles. Under the accounting rules, effective July 1, 1915, however, the fuel cost of freight and passenger engines will be separately recorded; the eggs will be counted before scrambling. Under these new rules it is probable that more than half of the total operating expenses will be directly allocated either to freight or to passenger service. Nevertheless a considerable amount of the expenses, including practically all of the Maintenance of Way accounts, cannot be so allocated, because they are joint costs, and not, like fuel expense, separate costs lumped together in the accounts.

When we come to subdivide the passenger expenses or the freight expenses—for example, when we seek to divide freight expenses between coal and all other freight—we find that a very much smaller proportion of the expenses can be so allocated. In a case recently decided by the Interstate Commerce Commission¹ it was contended by one side and practically admitted by the other² that less than one per cent of the total operating expenses could be allocated to the anthracite traffic of a road where, as the Commission points out,³ conditions were extraordinarily favorable for such allocation.

Even a cursory consideration of the complexities of railroading will demonstrate that there is no exaggeration in the statement that 99 per cent of the expenses cannot be allocated. Of all the items of expense, none pertain more exclusively to a particular traffic than the cost of fuel, wages of train crews, etc. (commonly called train expenses) and the cost of repairing the cars in which the commodity moves. If, upon examination of the facts, it appears that these expenses cannot be allocated, we hardly need pause to inquire whether such items as the salaries of

¹*Rates for Transportation of Anthracite Coal*, 35 I.C.C. 220 (1915).

²Record, pp. 6714-6715, 6972.

³35 I.C.C. 220, 263.

the general officers, the cost of operating signals and the Maintenance of Way expenses can be allocated.

Can train expenses and car costs be allocated to a particular traffic?

If we find that the commodity in question (in the case cited, anthracite) always moves in trains containing no other commodity, then we can say that the train expenses are peculiar to that commodity and can be allocated to it. But we find no such thing.

It may be the rule that on a given railroad coal is transported in trains containing nothing else. But this is not always the case, and as to the exceptions (which are numerous) there must be an apportionment of train expenses instead of an allocation. Wherefore, the train expenses of hauling coal are at least in part apportionments.

Even though it be the rule to haul solid trainloads of coal, yet it is not usually the rule for a road hauling both anthracite and bituminous coal to carry these two commodities in different trains. When, therefore, we seek to divide train expenses between anthracite and bituminous coal, we are obliged, even in the normal case, to apportion them rather than to allocate them.

Anthracite is marketed in several sizes (egg, stove, nut, pea, etc.) which take different freight rates. The different sizes (which are produced at the mines contemporaneously) are *always* moved in mixed trainloads; there is no such thing as a solid train of pea anthracite. If, therefore, we wish to know the cost of moving pea anthracite (and no other anthracite takes the same rate), we are driven to apportion *all* the train expenses.

So also of car repair costs. The cost of repairing coal cars is, of course, allocable to freight as distinguished from passenger. It is also allocable to traffic other than grain or dry goods as distinguished from grain or dry goods. But it is not possible to allocate the repair cost of coal cars even to the coal traffic in general (as distinguished from ore, sand, pig iron, etc.),—far less to anthracite coal or to any particular size of coal,—because each car is used for several kinds of traffic.

It may be contended that although no item of expense can be allocated *in toto* to a particular traffic, still the bulk of each item is caused, not jointly by several kinds of traffic, but exclusively by one kind of traffic. If half of a road's tonnage consists of one

commodity, such as anthracite, can it not be said that a portion of the cost of operating that road—perhaps not a full 50 per cent, but at least a substantial portion—is caused exclusively by the anthracite traffic, in the sense that if there were no anthracite traffic the total expense would be cut down in that proportion?

This contention would have more force if, as a matter of fact, the effort were ever made in rate case computations to find out how much expense would be saved to the railroad if the particular traffic had not moved. Suppose a railroad carries an equal tonnage of coal and ore, and carries no other commodity. Suppose also that neither commodity, ton for ton, wears out the cars faster than the other, that all cars are repaired in one shop, and that the cost of operating that shop would be 60 per cent of the present cost if only half the amount of repairing were done. In the sense that 40 per cent of the total would be saved if there were no coal traffic, the cost of the coal traffic is 40 per cent of the total. This might be termed the "minimum cost" of the coal traffic. In the sense that 60 per cent of the total expense would be necessary even if there were nothing but coal traffic, the "maximum cost" of the coal traffic is 60 per cent of the total cost of operating the shop. At what figure would a rate case computation show the "cost" of car repairs?

Unquestionably, at 50 per cent. If 40 per cent or 60 per cent were used, and the corresponding figures of other items of expense were also used (the maxima and minima of most items, *e.g.*, Maintenance of Way items, would be much further apart than the maximum and minimum car repair costs), the total would be either too low or too high to be of any practical use in a rate case, and perhaps that is one reason why the cost accountants aim to come somewhere between the two.

What does the 50 per cent represent, and what is the nature of the calculation which brings this result? The process of finding the 40 per cent is an allocation, if not in the strict sense of separating expenses attributable solely to that traffic, at least in the sense of estimating the expenses which are probably caused solely by that traffic. That process is the ascertainment of a fact. The ultimate *fact* ascertained is that 40 per cent of the total expense is an exclusive coal cost, and 20 per cent is a joint cost. To make a "fair" or "reasonable" division of this 20 per cent is to decide, not how

much of the 20 per cent of expense coal *causes*, but how much coal *ought to bear*. And that is deciding a matter, not of fact, but of policy. Indeed it is deciding the very question, and the whole question, that is decided when a reasonable rate is fixed—how much of the total expense is it just and fair and reasonable that a given traffic should bear.

These computations, then, consist of two processes. One is allocation, which is the ascertainment of facts; the other is apportionment, which is the determination of policy. The former concerns itself with what is; the latter with what should be. One process consists of untwisting the intertwined but separate and distinct strands of particular causation; the other of splitting the homogeneous fibres of a single cost jointly caused. Allocation aims to find what each service *costs*; apportionment aims to determine what each service *ought to pay*.

So much for the difference between the two parts of a rate case computation. It remains to consider some practical consequences of this difference.

The first is a query as to the significance of a so-called "cost" figure, which is the sum of the net results of two such different processes as allocation and apportionment. So far as this hybrid "cost" is an apportionment, can it be called either "accurate" or "inaccurate"?⁴ So far as it is an allocation, can it be called either "equitable" or "inequitable"?⁵ And if we cannot judge it by either the standards of accuracy or of equity, how *shall* we tell what significance to attach to it? Combining the two figures seems like adding quarts to feet. The desirable course would seem to be to resolve the total "cost" into its constituent elements, one marked "Matter of Fact—Allocated Cost of Service" and the other labeled "Matter of Opinion—Mathematical Photograph of Witness's Sense of Justice." If this is not to be done, we must treat the total as if it were altogether an apportionment because the presence of the apportionment element prevents the total figures from being a real

⁴ At 35 I. C. C. 220, 265, the Interstate Commerce Commission refers to the "substantial accuracy" of its estimate of the cost of carrying anthracite to tidewater.

⁵ In their report to the Public Service Commission of Pennsylvania on the cost of transporting anthracite to Philadelphia, (Docket 950), Messrs. Price, Waterhouse & Co. speak, in a single paragraph (pp. 2-3) of apportioning expenses "equitably and accurately."

cost or any other *fact*, whereas the presence of the allocation element does not vitiate the total figure as an expression of the witness's opinion as to what is a reasonable distribution of the joint burden.

A second query is as to who should determine the broad questions of public policy which are involved in the question: What is a just apportionment of the joint burden? If we were to levy an income tax, we should first decide whether to tax large incomes more than small incomes, and if so, how much more, and then call in a mathematician to figure the amount of each man's tax. We should hardly leave it to each appraiser to make up his own mind upon the rate of tax and the exemptions, no matter how expert he might be. Yet this is what we are doing in a rate case when we ask an expert accountant to apportion joint costs. Would it not be more appropriate to qualify the authors of these computations as expert rate-makers rather than as expert accountants?

Another consequence of the difference between allocations and apportionments and of the fact that rate case computations are, for the most part, apportionments and must be treated as though they were entirely such, pertains to the basis of apportionment. In determining the propriety of proposed bases of apportionment we must have an eye, not only to the facts studied, but to the purpose of the study. It is possible, and indeed probable, that if two cost studies are made of the same traffic on the same railroad at the same time, one for one purpose and the other for another, different bases of apportionment of the same joint expenses should be used. If, for example, the purpose of the study is to compare the efficiency of some new locomotives used on one division with that of other locomotives on another division having steeper grades, any basis of apportionment which ignores vertical lift would, obviously, be improper. If, on the other hand, the purpose is to compare the relative expensiveness of operating the two divisions, any basis of apportionment which does *not* ignore the factor of vertical lift would be improper.

In these days of "scientific management," cost studies are frequently made for the purposes of the operating officials of the railroads. It so happens that these purposes are in the main similar to each other, but quite different from the purpose of rate case computations. It is hardly an exaggeration to say that the

rate-making body is interested in all the features of cost the operating official ignores, and is not interested in any of the features which concern the operating official. In this state of affairs what havoc is wrought by the idea that the so-called "cost of a particular service" is a fact, an unalterable fact, which must be the same to the general manager as to the rate-making body!

Take, for example, fuel cost. Our road carries nothing but coal and ore. Two grades of fuel are used. The total cost of the fuel is known, and the general manager and the rate-making body are to apportion that cost. The general manager wants to learn the relative efficiency of the two grades of fuel. His bases of apportionment will, therefore, reflect such features as vertical lift, friction, and internal resistance of the engine. Some of these factors he might summarize in a unit such as pounds of draw bar pull or equated ton miles per ton of fuel, or perhaps just gross ton miles. On the other hand, his basis of apportionment would ignore all such features as the relative value of the coal or ore hauled, or its liability to loss and damage, or the markets in which it is sold, or other matters of prime importance to the rate-making body. An apportionment of fuel cost, to be of significance to the rate-making body, should ignore the factors reflected in the general manager's units and reflect the factors ignored in the general manager's units. It may be that such bases of apportionment as ton miles, car miles, and the like, are appropriate for the apportionments of the rate-making body, as well as for those of the operating official, but they are certainly not appropriate for the one *because* they are appropriate for the other. If they are appropriate for rate case apportionments, such appropriateness should be proved, instead of tacitly assumed.

Other practical consequences of this conception of the nature of rate case cost studies cannot in short space be set forth. For example, what bearing has this conception on the question: What is a *confiscatory* rate? This question, as is well recognized, is quite different from the question: What is a *reasonable* rate? It is worth while to note, in passing, that the Supreme Court is under no illusions regarding the nature of such computations; the court realizes that such apportionments do not reach or approximate *facts*, but determine a question of law.⁶

⁶*E.g.*, see opinion of Hughes, J., in *Nor. Pac. Ry. v. North Dakota*, 236 U. S. 585 (1915).

It is also worthy of note in passing that there is much more to be said for computations intended to compare one cost with another, than there is for calculations purporting to reach an absolute cost, because in the former case (the almost invariable case in cost studies made for operating purposes) the bases of apportionment are of comparatively small importance, provided the same bases are used on both sides of the comparison. The apportionments, so to speak cancel each other.

All the corollaries cannot here be discussed; the main object has been to expound the principal proposition—to protest against the use of the word “cost” in a sense believed to be incorrect and fruitful of fallacies. If the views here offered be sound, there is no such figure known to rate cases as the *cost* of a particular service.